

X-10 FACTS TO KEEP IN MIND:

Lamp modules that have been dimmed, can not be turned on to full brightness with an X-10 ON command, the module has to first be turned off. Also lamp modules can dim a light until it appears off but in actuality it is still on, this is called a "soft off". If one macro dims a light to a "soft off" condition and next macro wants to turn the same light back on to full brightness, that lamp module has to be either 1) brightened using bright commands or 2) first be turned off and then on.

A shortcut in transmitting X-10 codes B12 ON, B7 ON, B4 ON and B3 ON for example, is to transmit them as B12, B7, B4, B3 ON. This also works with dimming or brightening several lights at the same time.

A NOTE ON THE ORDER AND METHOD OF PROGRAMMING MACROS AND IR TRIGGERS USED BY MACRO MODULE IR:

When the Macro Module IR is placed in the programming mode and a valid name has been entered, the Macro Module IR proceeds in the following manner. First it searches it's memory for any macros or IR triggers with identical names. If a name match occurs, that macro or IR trigger is used again for programming. If a name match is not found, then any deleted macros or IR triggers are then used for programming. If all macros or IR triggers have been programmed, the next to be programmed is taken from the top of the "stack". The Macro Module IR stores programmed macros and IR triggers in a first-in-last-out fashion. After a macro or IR trigger is programmed, it is placed at the bottom of the stack while all others are moved up. In this way, the oldest macro or IR trigger is always used next for programming.

Erase and record as often as you like. When no power is present, data retention of all Macros/Timers, IR triggers and their contents is approximately 40 years. However, any Timers in progress when power is lost will be canceled when power is restored.

FEDERAL COMMUNICATIONS COMMISSION RADIO and TELEVISION INTERFERENCE STATEMENT FOR a CLASS 'B' DEVICE

This equipment generates and uses radio frequency energy and if not installed and used properly, in accordance with the installation instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class 'B' computing device in accordance with the specifications in Subpart B of FCC Rules and Regulations (as outlined in the Code of Federal Regulation, Title 47), which are designed to provide reasonable protection against interference in residential installation.

TO THE USER: if this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and then on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into a different outlet so that the equipment and receiver are on different branch circuits.
- Consult an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible compliance could void the user's authority to operate the equipment.

Macro Module IR

X-10 code sequencer with Infrared Trigger

INSTRUCTION MANUAL

Using the Macro Module IR is one of the best ways to control many X-10 devices with just a few commands. The Macro Module IR allows you to send a "macro" or sequence of X-10 codes triggered by any one of three types of inputs: 1) a single X-10 code transmitted from any X-10 controller, 2) a single IR (infrared) code transmitted from any typical home remote controller, or 3) from a timer that has expired which was programmed into the Macro Module IR. With this flexibility, it is easy to create a mode or "scene", say for TV watching or dining, with just a push of a button. Another feature of the Macro Module IR is its ability to error check its own X-10 transmissions. Before actually transmitting, the Macro Module IR first checks the AC power line for other X-10 activity; when clear, each X-10 code within the macro is then transmitted and afterwards checked for accuracy. If for any reason an X-10 code transmission gets corrupted, the Macro Module IR will re-transmit the same X-10 code up to five times until an accurate transmission is sent.

FEATURES:

- **STORAGE FOR UP TO 42 X-10 MACROS**
- **LEARNS UP TO 27 INFRARED CODES FROM MOST HOUSEHOLD REMOTE CONTROLLERS**
- **UP TO 32 TIMERS CAN BE PROGRAMMED TO SEND AN X-10 CODE FROM 2 MIN. TO 8.5 HOURS AFTER TIMER HAS BEEN INITIATED**
- **X-10 TRANSMISSION DETECT, CONFIRM AND RETRY**
- **NON-VOLATILE MEMORY, X-10 CODES WITHIN MACRO ARE NOT LOST DURING POWER FAILURE**

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INSTALLING THE MACRO MODULE:

- 1 Plug the TW523 Two-Way Power Line Interface into any 120 volt AC outlet. The Power Line Interface is what allows communication between the Macro Module IR and the AC power line. The red light on the **TW523** indicates power is present and will blink off when receiving or transmitting X-10 codes.
- 2 Connect one end of the provided modular cord into the TW523 Power Line Interface and the other end into the modular jack on the back of the Macro Module IR (see Figure 1).
- 3 Plug the 12 volt power adapter into any 120 volt AC outlet and it's cord end into the round power jack hole on the back of the Macro Module.
- 4 On the front face (see Figure 2) the red power/programming light should light after 1 second upon connection to power. Next to the red light is the window for the IR (infrared) receiver. Make sure this window is in line of sight of the IR remote controller that is being used.

To transmit the X-10 code A7 ON in the example above, press the #1 button on the infrared remote while aiming it at the Macro Module IR; the red light will blink off and A7 ON will transmit. Remember, the X-10 code A7 ON in this example can be used as a macro name to initiate a macro. For example, let's say a macro named A7 ON was already programmed to transmit the X-10 codes: B3 ON, B5 ON and B8 ON as in example 1 on page 5. When the #1 button on the IR controller is pressed, the X-10 code A7 ON is transmitted followed by the X-10 codes B3 ON, B5 ON and B8 ON.

Note: when in the Macro or IR programming mode, the Macro Module IR will automatically return to normal playback mode in 4 minutes if no programming activity is occurring. Also let's say you mistakenly entered the wrong programming mode by pressing the program switch 3 times and entering the IR programming mode but really you wanted to be in the Macro/Timer programming mode. Simply press the switch 3 times again to first exit the IR programming mode. When the red light stops blinking and stays on, press the program switch 2 times to enter the Macro/Timer programming mode.

DELETING MACROS and TIMERS:

When a macro is deleted, all Timers associated with that macro are also deleted. Macros can be deleted either individually or as a whole.

To delete a selected macro: press the program switch twice to enter the Macro/Timer programming mode. After the red light starts blinking, transmit the name of the macro to be deleted. After the red light stops blinking and turns off, press the program switch twice to exit the programming mode.

To delete all macros: press the program switch **5** times and wait one second. The red light will blink off momentarily to indicate all Macros and Timers have been cleared.

DELETING INFRARED TRIGGERS:

An infrared trigger can be deleted either individually or as whole.

To delete a selected IR trigger: press the program switch three times to enter the IR programming mode. After the red light starts blinking, transmit the IR trigger to be deleted from your IR remote controller. After the red light stops blinking and turns off, press the program switch three times to exit the IR programming mode.

To delete all IR triggers: press the programming switch **6** times. The red light will blink off momentarily to indicate all IR triggers have been deleted.

PROGRAMMING DIM AND BRIGHT X-10 CODES:

Due to limitations in the TW523 Power Line Interface, when programming, do not transmit a continuous stream of dim or bright codes by keeping the button held down; rather, send dim or bright codes individually by pressing and releasing (tapping) the dim or bright button. Tip: If a light has been dimmed manually or by another macro, and your macro is to dim it again, make sure that in your macro you first turn the light off before dimming so the correct dimness level can be achieved. See X-10 FACTS TO KEEP IN MIND on page 8.

PROGRAMMING AN IR (INFRARED) TRIGGER:

An IR "trigger" is a term used to describe a received infrared signal that causes the Macro Module IR to transmit a **single** X-10 code (number and function). This transmitted X-10 code can also be a valid Macro name so to initiate a Macro transmission.

The Macro Module IR can learn IR codes from most later model IR remote controllers. To have the Macro Module IR "learn" an IR code and then transmit an X-10 code, proceed with the following steps:

- 1 Press the program switch **three** times, wait one second, the red light on the Macro Module IR will **blink fast** (compared to Macro/Timer programming which blinks more slowly); this indicates that the Macro Module IR is in the IR programming mode.
- 2 Pick a button on your IR remote (preferably one that is not used for anything), aim the remote at the front face of the Macro Module IR and press the button. If the IR code can be recognized, the red light will stop blinking and turn off. If the red light turns back on, the Macro Module IR did not recognize that particular IR code and will end the programming; start over with step 1 and try another IR code. If the red light continues to blink, either no IR code was transmitted, or the Macro programming mode was entered by mistake (two pushes on the program switch instead of three).
- 3 Now transmit the X-10 number code followed by a X-10 function code (also codes All Units Off or All Lights ON can be used) to be associated with the IR trigger code. When received, the red light will turn on again.

Example: Use the #1 button on an infrared remote controller to transmit an A7 ON X-10 code:

- 1) Press program switch 3 times, the red light will start blinking.
- 2) Press the #1 button on the IR remote, the red light will stop blinking and turn off.
- 3) Transmit the X-10 code A7 ON. When received, the red light will turn on again. The Macro Module IR now automatically exits the programming mode

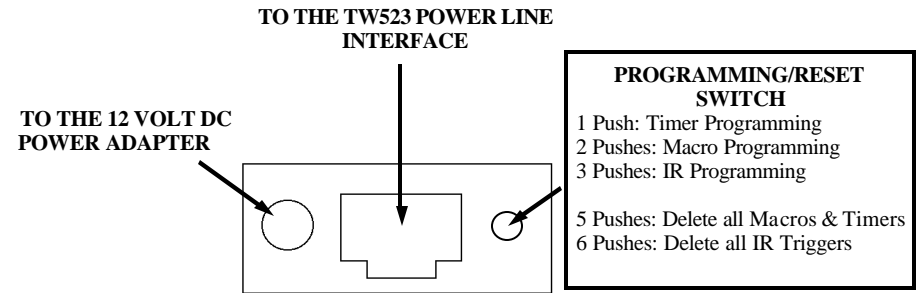


FIGURE 1: MACRO MODULE

IR REAR PANEL
WIRE CONNECTION DIAGRAM

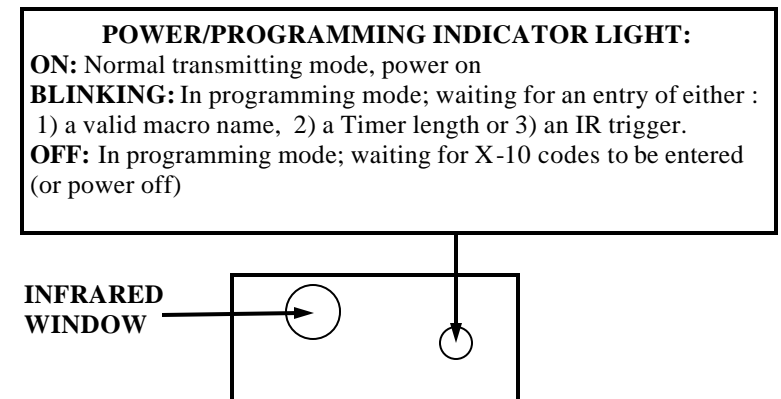


FIGURE 2: VIEW OF FRONT FACE OF MACRO MODULE IR

Testing The Macro Module IR:

Try transmitting an X-10 code from any X-10 controller. Each time an X-10 code is received by the TW523 Power Line Interface, the red light on it will blink off momentarily. If it does not, either the X-10 signal is too weak due to long distances from the transmitter and receiver, or the TW523 Power Line Interface is faulty. In addition, certain appliances can inject noise onto the AC power line, corrupting signals. If problems occur while programming, unplug each appliance one at a time to see if the problem goes away. If an offending appliance is found, install an X-10 noise filter on it. Also signal bridges near the circuit breaker help considerably.

When transmitting a macro from the Macro Module IR, the red light on TW523 Power Line Interface will blink off with every code transmitted. If it does not, the Macro Module IR may have been programmed incorrectly.

PROGRAMMING MACROS & TIMERS: To program a macro with a set of X-10 codes or to re-program an already existing macro, proceed with the following steps:

- 1 Press the program switch **twice**, after a second the red light on the Macro Module IR will **blink slowly** (compared to IR programming which blinks twice as fast); this indicates that the Macro Module IR is in the Macro/Timer programming mode.
- 2 Each macro is associated with a name. Using any X-10 controller, transmit a valid macro name by sending an X-10 number code followed by an X-10 function code, i.e. B1 ON, D7 DIM, etc. When a valid name has been sent, the red light will stop blinking and turn **off**. Note: if an invalid name is entered, such as when a function code is sent before a number code, the red light will turn back on to indicate programming has ended. Some transmitters such as the X-10 Mini-Controller, transmit an X-10 number/function code all with one button push.
- 3 Now transmit all X-10 number or function codes to be contained in the macro. Each macro can contain up to 32 separate X-10 codes; if that number is exceeded, programming will roll-over succeeding codes into another macro.
- 4 TIMERS can be programmed, if desired, just before or after step 3, (see PROGRAMMING TIMERS).
- 5 Press the program switch **twice** to exit Macro programming. After a second the red light will turn back **on** to indicate programming has ended.

PROGRAMMING TIMERS: Timers are used to transmit a **single** X-10 code after a certain period of time has elapsed from the initial transmission of a macro. They can only be programmed during regular Macro programming **just before or after step 3 above**. Press the program switch once, the red light will start blinking. Enter the Timer length in minutes (2 to 510) by transmitting X-10 number codes on any House Code using any X-10 transmitter (function codes are ignored and any X-10 number code received greater than 9 is treated as a 0, also only the last 3 numbers received are recorded. Even number of minutes are recorded, if an odd number is entered, the next highest even number is used). For example, if the Timer length is to be 106 minutes and your transmitter happens to be on X-10 house code L, transmit: L1, L10, L6. Then press the program switch once to record the Timer length, the red light will stop blinking and turn off. Now transmit the X-10 number code followed by a function code (also codes All Units Off or All Lights ON can be used) to be associated with the Timer's expiration; the red light will blink **on** briefly when these X-10 codes have been received.

NOTE: only a single X-10 number & function code is transmitted after a Timer has expired. This X-10 code can be used as a valid Macro name. So if a Timer is to be used to initiate a Macro transmission, a 2nd Macro needs to be programmed using the Timer's X-10 code as the Macro's name. To illustrate, in example 2 on page 5, a Timer is set to send a B5 OFF code after 20 minutes. This code, B5 OFF, can then be used as the name of a 2nd Macro say to turn off

B3,B8, etc. The Macro Module IR has memory to store 32 Timers but only 16 Timers can be active at a time.

Timers are useful in many ways. Turning on a bathroom exhaust fan with an X-10 wall switch can trigger a macro containing a Timer to turn the fan off in 10 minutes. The same can be applied to a garage or closet light. Using an X-10 device to transmit an ON code for landscape lights when the sun goes down, can also trigger a Timer to turn the lights off in say 5 hours. A macro can be programmed to turn off all the lights in house off before bedtime except one which is on a 2 minute Timer to allow time to reach the bedroom.

Note: when in the Macro or IR programming mode, the Macro Module IR will automatically return to normal playback mode in 4 minutes if no programming activity is occurring.

Macro And Timer Programming Examples:

Example 1: When the Macro Module IR receives the X-10 code A7 ON (the macro's name), it initiates a macro containing B3 ON, B5 ON, B8 ON:

- 1) Press program switch 2 times, the red light will start blinking.
- 2) Transmit an X-10 A7 ON code, red light will turn off.
- 3) Transmit X-10 codes B3 ON, B5 ON and B8 ON.
- 4) Press program switch twice, to exit programming, the red light will turn on.

Example 2: To have the X-10 code A8 ON initiate a macro containing B3 ON, B5 ON, B8 ON and set a Timer to send a B5 OFF after 20 minutes:

- 1) Press program switch 2 times, the red light will start blinking.
- 2) Transmit an X-10 A8 ON code, the red light will turn off.
- 3) Transmit X-10 codes B3 ON, B5 ON and B8 ON.
- 4) Press program switch once to enter Timer programming, the red light will start blinking.
- 5) Transmit X-10 codes B2 ON and B10 ON (functions are inconsequential).
- 6) Press program switch once to record the Timer length, the red light will turn off.
- 7) Transmit an X-10 B5 OFF code, the red light will blink on briefly.
- 8) Press program switch twice, to exit programming, the red light will go on.

Example 3: To turn on a lamp module set to A9 and then automatically turn off in 6 minutes:

- 1) Press program switch 2 times, the red light will start blinking.
- 2) Transmit an X-10 A9 ON code, red light will turn off.
- 3) Press program switch once to enter Timer programming, the red light will start blinking.
- 4) Transmit an X-10 code A6 ON code (functions are inconsequential).
- 5) Press program switch once to record the Timer length, the red light will turn off.
- 6) Transmit an X-10 A9 OFF code, the red light will blink on briefly.
- 7) Press program switch twice, to exit programming, the red light will go on.